UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,060	07/01/2003	Zhigang Fan	D/A3165	3539

25944 7590 11/06/2006	EXAMINER
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320	TUCKER, WESLEY J

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 11/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/612,060	FAN, ZHIGANG
	Examiner	Art Unit	
	Wes Tucker	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>01 July 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-20</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-20</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>01 July 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed July 1st 2003 fails to comply with the

provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because the application cited as the

second document in the IDS by inventor Zhigang Fan does not have a U.S. Patent

Application number. It is only referenced with an attorney docket number which is not

acceptable. A corrected IDS with the correct U.S. Patent Application number must be

submitted in order for the office to recognize the IDS. It has been placed in the

application file, but the information referred to therein has not been considered as to the

merits. Applicant is advised that the date of any re-submission of any item of

information contained in this information disclosure statement or the submission of any

missing element(s) will be the date of submission for purposes of determining

compliance with the requirements based on the time of filing the statement, including all

certification requirements for statements under 37 CFR 1.97(e). See MPEP

§ 609.05(a).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by
another filed in the United States before the invention by the applicant for patent or (2) a patent
. granted on an application for patent by another filed in the United States before the invention by the

applicant for patent, except that an international application filed under the treaty defined in section
351(a) shall have the effects for purposes of this subsection of an application filed in the United States
only if the international application designated the United States and was published under Article 21(2)
of such treaty in the English language.

Claims 1-4, 10-12 and 16-17 are rejected under 35 U.S.C. 102(e) as being

anticipated by U.S. Patent 6,947,178 to Kuo et al.

With regard to claim 1, Kuo discloses a method for reducing boundary effects for

images with mixed screen patterns, comprising the steps of:

halftoning an image (Fig. 1, element 5); and

adjusting boundary regions of said image to minimize brightness deviation of said

halftone from an original contone (column 2, lines 64-67 and column 3, lines 1-16).

Kuo discloses preserving edges or boundary regions by performing adaptive low-

pass filtering and total variation minimization techniques for grey-scale images. Grey

scale variation minimization is interpreted as minimization of brightness deviation.

With regard to claim 2, Kuo discloses the method according to claim 1 for

reducing boundary effects for images, wherein adjusting a boundary region further

comprises the step of: performing a low-pass filtering in halftones in said boundary

regions (column 3, lines 57-60), which have one or more than one pixels wide along a

boundary (column 4, lines 45-67).

With regard to claim 3, Kuo discloses the method according to claim 2 for

reducing boundary effects for images, wherein low-pass filtering further comprises the

step of: choosing a cutoff frequency for said low-pass filtering (column 7, lines 6-20).
Kuo discloses determining a threshold for smoothing or low-pass filtering the image. It
should also be noted that choosing a cut-off frequency is inherent to using a low-pass
filter. By definition a low-pass filter is a filter that "passes" all-filters below the cut-off
frequency and that cut-off frequency must be in some way chosen simply by the use of
the low-pass filter.

With regard to claim 4, Kuo discloses the method according to claim 2 for
reducing boundary effects for images, wherein low-pass filtering further comprises the
step of: choosing a cutoff frequency for said low-pass filtering to be around halftone
frequency (column 7, lines 15-40). Kuo discloses the frequency determination to be
done with regard to the screen frequency, which is interpreted as the half-tone
frequency since it considered appropriate fro error-diffused halftones (column 7, lines 1-
15).

With regard to claim 10, Kuo discloses a method for reducing boundary effects
for images with mixed screen patterns, comprising the steps of:

halftoning an image (Fig. 1, element 5);

adjusting a boundary region of said image to minimize brightness deviation of
said halftone from an original contone (column 2, lines 64-67 and column 3, lines 1-16);
and

performing a low-pass filtering in halftones in boundary regions, (column 3, lines 57-60), which have one or more than one pixels wide along a boundary (column 4, lines 45-67).

Kuo discloses preserving edges or boundary regions by performing adaptive low-pass filtering and total variation minimization techniques for grey-scale images. Grey scale variation minimization is interpreted as minimization of brightness deviation.

With regard to claim 11, Kuo discloses the method according to claim 10 for reducing boundary effects for images, wherein low-pass filtering further comprises the step of: choosing a cutoff frequency for said low-pass filtering (column 7, lines 6-20). Kuo discloses determining a threshold for smoothing or low-pass filtering the image. It should also be noted that choosing a cut-off frequency is inherent to using a low-pass filter. By definition a low-pass filter is a filter that "passes" all-filters below the cut-off frequency and that cut-off frequency must be in some way chosen simply by the use of the low-pass filter.

With regard to claim 12, Kuo discloses the method according to claim 11 for reducing boundary effects for images, wherein low-pass filtering further comprises the step of: choosing a cutoff frequency for said low-pass filtering to be around halftone frequency (column 7, lines 15-40). Kuo discloses the frequency determination to be done with regard to the screen frequency, which is interpreted as the half-tone

frequency since it considered appropriate fro error-diffused halftones (column 7, lines 1-15).

With regard to claim 16, Kuo discloses a method for reducing boundary effects for images with mixed screen patterns, comprising the steps of:

means for halftoning an image (Fig. 1, element 5); and

means for adjusting a boundary region of said image to minimize brightness deviation of said halftone from an original contone (column 2, lines 64-67 and column 3, lines 1-16). Kuo discloses preserving edges or boundary regions by performing adaptive low-pass filtering and total variation minimization techniques for grey-scale images. Grey scale variation minimization is interpreted as minimization of brightness deviation.

Kuo further discloses means for performing a low-pass filtering in halftones in said boundary regions, which have one or more than one pixels wide along a boundary (column 3, lines 57-60), which have one or more than one pixels wide along a boundary (column 4, lines 45-67); and

means for choosing a cutoff frequency for the low-pass filtering (column 7, lines 6-20). Kuo discloses determining a threshold for smoothing or low-pass filtering the image. It should also be noted that choosing a cut-off frequency is inherent to using a low-pass filter. By definition a low-pass filter is a filter that "passes" all-filters below the

cut-off frequency and that cut-off frequency must be in some way chosen simply by the use of the low-pass filter.

With regard to claim 17, Kuo discloses the method according to claim 16 for reducing boundary effects for images, wherein low-pass filtering further comprises the step of: means for choosing a cutoff frequency for said low-pass filtering to be around halftone frequency (column 7, lines 15-40). Kuo discloses the frequency determination to be done with regard to the screen frequency, which is interpreted as the half-tone frequency since it considered appropriate fro error-diffused halftones (column 7, lines 1-15).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5-9, 13-15 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination U.S. Patents 6,947,178 to Kuo et al. and 5,745,660 to Kolpatzik et al.

With regard to claim 5, Kuo discloses the method according to claim 2 for reducing boundary effects for images, wherein adjustment further comprises the step of: comparing said filtering result to said original contone image (column 2, lines 39-43 and 64-67 and column 8, lines 15-17). Kuo discloses a method concerned with providing an appealing continuous tone image from a halftone image. However Kuo does note explicitly disclose generating an error map. Kolpatzik discloses generating an error map in a similar environment of enhancement of halftone images and discloses determining an error map after filtering (column 9, lines 23-45). Kolpatzik teaches that the error maps are used to enhance the image and to help in preventing the presence of undesirable artifacts around the edge regions of the image (column 10, lines 5-12). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use the error maps as taught by Kolpatzik for preventing edge distortions in halftone images in combination with the edge enhancement of Kuo because the the error maps aid in the correction of edge artifacts.

With regard to claim 6, the discussion of claim 5 applies. The error map of Kolpatzik uses pixel location maps in the error mapping disclosed.

With regard to claim 7, Kolpatzik discloses adjusting said pixels in said boundary regions to reduce magnitude of errors (column 9, lines 50-67).

With regard to claim 8, Kolpatzik discloses adjusting sequentially said pixels in said boundary regions to reduce magnitude of the errors (column 10, lines 1-25).

With regard to claim 9, Kolpatzik discloses adjusting said pixels by staring from pixels with larger errors to ones with smaller errors in said boundary regions to reduce magnitude of the errors (column 9, lines 50-67). Kolpatzik discloses progressively reducing the mapped errors.

With regard to claims 13 and 18, the discussion of claim 5 applies.

With regard to claims 14 and 19, the discussion of claim 6 applies.

With regard to claims 15 and 20, the discussion of claim 7 applies.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wes Tucker whose telephone number is 571-272-7427. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Bhavesh Mehta can be reached on 571-272-2214. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Wes Tucker

10-26-06
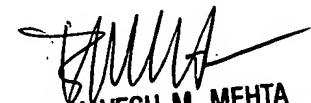
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